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BIOLOGICAL EVALUATION OF THE JACK PINE BUDWORM OUTBREAK ON THE WASHBURN DIST.-CHEQUAMEGON N.F.
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A. Introductory Statement

For the past several years the jack pine budworm has been active in an area just west of the southern one-half of the Washburn District, Chequamegon N.F. The infestation had been restricted to the non-National Forest holdings in this area prior to this year. During the middle part of July, I made a forest insect and disease aerial detection survey of the Washburn District with the results that one area of heavy defoliation was detected on the southern one-half of the district and an area of light defoliation was detected on the northern one-half of the district.

During the week of September 6, I made a jack pine budworm egg mass survey in and around the defoliated areas.

B. Technical Information

1. Causal Agent-Choristoneura pinus Freeman, the jack pine budworm.

2. Host tree Attacked-Primarily jack pine, Pinus banksiana Lamb., but also several other coniferous species that might be growing in the understory; the most important of these is red pine, Pinus resinosa Ait.

3. Type of Damage-Light defoliation on northern portion of outbreak. Medium to severe defoliation on southern portion of outbreak-heavier defoliation occurs sporadically but some apparent first year mortality is evident.

4. Biological Data-Parasitism can be very effective in controlling the jack pine budworm. I do not fully know at this time what effect parasitism will have in controlling the Washburn outbreak. Many of the egg masses in the northern portion of the outbreak were partially or totally black, indicating egg parasitism.

5. Enviromental Factors-Enviromental conditions this spring and summer were ideal for a jack pine budworm outbreak. A late spring or late frost next year could have a very damaging effect on the budworm populations.

6. Extent of Outbreak-Approximately 1000 (including 250 acres of plantations) acres of jack pine have been defoliated along the western edge of the southern one-half of the Washburn District. Defoliation has ranged from light to extremely heavy. In addition,

approximately 1000 acres of jack pine plantations have been lightly defoliated on the northern one-half of the district.

7. Location of Outbreak-The attached maps show the locations of the outbreak; the maps also show the locations of the egg mass plots (a plot consisted of 3 trees from which 6 branches-2 from each tree-were taken at mid-crown.) and the results of the egg mass survey.

   The southern portion of the outbreak is in T,46N,R.8W, Sec. 19,30&31. The northern portion of the outbreak is in T,49N,R.7W, Sec. 14, 15, 22 and 23.

8. Discussion-Egg mass counts indicate heavy defoliation will occur sporadically in the southern portion of the outbreak next year. The outbreak will increase in intensity but not greatly in extensity because with the exception of the jack pine in Section 19, T.46N.R.8W, the southern portion of the outbreak is surrounded by non-host type. In addition, much of the susceptible type in the southern outbreak is non-plantation. Egg mass counts in Sections 7 and 18, T.46N,R.8W, indicate heavy defoliation will occur next year. This area showed only vey light defoliation occurring this year.

   Egg mass counts on the northern portion of the outbreak indicate that defoliation will be generally light but that several "hot spots" with moderate to heavy defoliation may develope. This area will have to be watched very closely because there is considerable susceptible type to the east and south.

   In addition to the above areas, a jack pine plantation in Section 36, T.49N,R.7W, and Section 31,T.49N,R.6W, showed light to moderate defoliation this year, but the egg mass counts indicated that only light defoliation would occur next year. This area will also require close watching next year as it is entirely surrounded by susceptible type.

   It should be pointed out that egg mass surveys only indicate what may occur under ideal rearing conditions. There are several things, notably climatic conditions and parasitism, that can make defoliation predictions from egg mass data absolutely meaningless. Because of this, egg mass data used as an evalvation tool must be used only in conjunction with larval surveys that are made early in the spring.

9. Recommendations-The jack pine budworm is capable of completely defoliating a jack pine in a single season. Usually, however, two or three years of heavy defoliation are needed before top-kill or mortality occurs. The trees that are completely defoliated and killed in a single season are usually the older "wolf" trees that

have a preponderance of staminate flowers which the budworms need for their early development. In a sense, the killing of these "wolf" trees is a good thing for the remaining stand as it is doubtful if infestations can reach epidemic proportions without them.

If the budworm populations materialize next year that have been predicted by this fall's egg mass survey, heavy defoliation will occur sporadically in the southern portion of the outbreak next year. This heavy defoliation could result in some timber loss, particularly if next summer is as dry or drier than this past summer.

The southern portion of the outbreak could pose a possible suppression situation for next year, particularly because of the heavy defoliation predicted next year for the currently undefoliated jack pine in Sections 7 and 18, T46N, R8W. At present, however, the natural boundaries of the infestation, the general lack of severe defoliation in the plantations and the sporadic nature of the damage on the remainder of the outbreak, make immediate control biologically unfeasible.

The northern portion of the outbreak poses no immediate threat or suppression situation but will be larval surveyed next spring along with the southern portion of the outbreak to fully evaluate the situation.

My biological recommendation is against initiating control at this time. Another evaluation of the situation, particularly the southern portion of outbreak, will be made next spring.

Enclosure

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